REGARDING PRELIMINARY AMENDMENT
IDENTIFYING ARTICLE 34 AMENDMENTS
U.S. Application No.: 10/551,645

AMENDMENTS TO THE SPECIFICATION

**Please replace the present Title with the following amended title:**

INTERNAL ENGINE PISTON AND ITS PRODUCTION METHOD

**Please replace the first full paragraph on page 12 with the following rewritten paragraph:**

C forms eutectic carbides, lowers a solidification temperature, and improves the castability of a melt, namely improves the flowability of a melt during casting, etc. The last effect is extremely important when a thin piston is cast. However, when C exceeds 0.8%, an area ratio of the eutectic carbides crystallized becomes as much as more than 35%, and precipitated carbides of Cr, etc. increase, rather decreasing seizure resistance and ductility and increasing attackability to a mating member. Accordingly, C is 0.8% or less. The C content is preferably 0.1-0.55% ~~0.6%~~, more preferably 0.3-0.55%.

**Please replace the second full paragraph on page 25 with the following rewritten paragraph:**

The reciprocal kinetic friction wear test was conducted by the following procedure. Each sample was first worked to a planar test piece 71 of 60 mm x 20 mm x 5 mm, and ground to an average surface roughness Ra (JIS B 0601) of 0.1-0.2 μm. As shown in Fig. 7, each planar test piece 71 was attached to a reciprocal kinetic friction detector (AFT-15M available from ORIENTEC Co., Ltd.), which is not shown. Lubricating oil (corresponding to 10W-30) was dropped onto the planar test piece 71 in a direction shown by an arrow 76. With a ball 72 of 5

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mm ~~μm~~ in diameter made of high-carbon chromium bearing steel SUJ2 (JIS G 4805), which corresponded to the piston pin as a mating member, in contact with the planar test piece 71 at a thrust load 75 of 58.8 N, the planar test piece 71 was reciprocally slid in a direction shown by an arrow 74 at a sliding width of 1 cm and a reciprocal period of 1.6 seconds, to measure a wearing force. The number of reciprocal sliding (hereinafter referred to as "number of wear") was counted until the wearing force reached 6.86 N, and the seizure resistance to a pin was evaluated by the following standards:

**Please replace Table 2 on page 28 with the following new Table 2:**

| No.[1] | Eutectic Carbides | | Number of Eutectic Colonies[3] (/mm$^2$) | Seizure Resistance to Pin | | Seizure Resistance to Liner | |
|---|---|---|---|---|---|---|---|
| | Area Ratio (%) | $D_{av}$[2] (μm) | | Number of Wear | Evaluation | Seizure Load (kgf) | Evaluation |
| Example 1 | 0.1 | 0.1 | 3 | 300 | Good | 101 | Good |
| Example 2 | 0.2 | 0.2 | 3 | 305 | Good | 105 | Good |
| Example 3 | 0.3 | 0.3 | 3 | 310 | Good | 110 | Good |
| Example 4 | 6 | 1.6 | 30 | 521 | Excellent | 125 | Excellent |
| Example 5 | 10.0 | 1.7 | 26 | 530 | Excellent | 130 | Excellent |
| Example 6 | 15.0 | 2.0 | 12 | 510 | Excellent | 120 | Excellent |
| Example 7 | 1.0 | 0.9 | 8 | 318 | Good | 115 | Good |
| Example 8 | 1.4 | 1.0 | 12 | 350 | Good | 119 | Good |
| Example 9 | 6.1 | 1.7 | 40 | 470 | Excellent | 150 | Excellent |
| Example 10 | 4.7 | 1.7 | 35 | 471 | Excellent | 140 | Excellent |
| Example 11 | 5.4 | 1.7 | 38 | 450 | Excellent | 140 | Excellent |
| Example 12 | 1.7 | 1.1 | 10 | 330 | Good | 130 | Excellent ~~Good~~ |
| Example 13 | 1.0 | 0.8 | 10 | 340 | Good | 110 | Good |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Example 14 | 0.7 | 0.8 | 5 | 385 | Good | 125 | Excellent |
| Example 15 | 4.5 | 1.6 | 34 | 420 | Excellent | 125 | Excellent |
| Example 16* | 4.8 | 1.8 | 32 | 450 | Excellent | 130 | Excellent |
| Example 17 | 1.1 | 1.1 | 10 | 370 | Good | 125 | Excellent ~~Good~~ |
| Example 18 | 1.0 | 1.0 | 17 | 388 | Good | 120 | Excellent ~~Good~~ |
| Example 19 | 4.1 | 1.3 | 32 | 411 | Excellent | 135 | Excellent |
| Example 20* | 4.3 | 1.6 | 30 | 421 | Excellent | 137 | Excellent |
| Comp. Ex. 1 | 0.0 | - | - | 253 | Fair | 98 | Fair |
| Comp. Ex. 2 | 11.0 | 1.90 | 20 | 452 | Excellent | 120 | Excellent |
| Comp. Ex. 3 | 0.0 | - | - | 267 | Fair | 89 | Fair |
| Comp. Ex. 4 | 0 | - | - | 263 | Fair | 100 | Good ~~Fair~~ |
| Conv. Ex. 1 | 0.0 | - | - | 289 | Fair | 102 | Good ~~Fair~~ |
| Conv. Ex. 2 | 0.0 | - | - | 254 | Fair | 100 | Good ~~Fair~~ |

**Please replace Table 4 on page 35 with the following new Table 4:**

| No.[1] | Young's Modulus (GPa) at | | | Thermal Cracking Resistance | | Average Linear Thermal Expansion Coefficient Between Room Temperature and 500°C (x $10^{-6}$/°C) |
|---|---|---|---|---|---|---|
| | 350°C | 450°C | 500°C | Maximum Crack Length (μm) | Evaluation | |
| Example 1 | 194 | 177 | 161 | 90 | Good | 12.9 |
| Example 2 | 193 | 173 | 160 | 94 | Good | 12.8 |
| Example 3 | 195 | 176 | 160 | 87 | Good | 12.4 |
| Example 4 | 192 | 175 | 158 | 80 | Excellent | 12.5 |
| Example 5 | 191 | 176 | 158 | 80 | Excellent | 12.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Example 6 | 193 | 177 | 157 | 88 | Good | 12.2 |
| Example 7 | 194 | 171 | 153 | 95 | Good | 11.8 |
| Example 8 | 196 | 172 | 153 | 94 | Good | 11.9 |
| Example 9 | 197 | 173 | 155 | 55 | Excellent | 12.1 |
| Example 10 | 197 | 164 | 157 | 51 | Excellent | 12.5 |
| Example 11 | 198 | 168 | 156 | 47 | Excellent | 12.4 |
| Example 12 | 197 | 168 | 158 | 50 | Excellent | 11.9 |
| Example 13 | 199 | 173 | 154 | 90 | Good | 12.6 |
| Example 14 | 195 | 173 | 155 | 89 | Good | 12.8 |
| Example 15 | 194 | 172 | 155 | 87 | Good | 12.6 |
| Example 16* | 193 | 168 | 154 | 98 | Good | 12.4 |
| Example 17 | 198 | 171 | 155 | 49 | Excellent | 12.4 |
| Example 18 | 195 | 174 | 157 | 60 | Excellent | 12.2 |
| Example 19 | 195 | 168 | 155 | 46 | Excellent | 12.0 |
| Example 20* | 195 | 168 | 155 | 46 | Excellent | 12.0 |
| Comp. Ex. 1 | 194 | 174 | 152 | 117 | Fair | 12.1 |
| Comp. Ex. 2 | 197 | 174 | 155 | 100 | Good ~~Fair~~ | 12.6 |
| Comp. Ex. 3 | 194 | 171 | 151 | 178 | Poor | 12.6 |
| Comp. Ex. 4 | 195 | 176 | 148 | 156 | Poor | 12.6 |
| Conv. Ex. 1 | 175 | 160 | 135 | 325 | Poor | 13.1 |
| Conv. Ex. 2 | 194 | 174 | 155 | 121 | Fair | 14.0 |

**Please replace the first full paragraph on page 36 with the following rewritten paragraph:**

With respect to high-temperature rigidity, Examples 1-20 were substantially the same as Comparative Examples 1-4 and Conventional Examples 1 and 2. However, with respect to the

thermal cracking resistance, the maximum crack length was 100 μm or more ~~exceeded 100 μm~~ in Comparative Examples 1-4 and Conventional Examples 1 and 2, but it was less than 100 μm in Examples 1-20.

**Please replace Table 8 at page 46 with the following new Table 8:**

| No.(1) | Young's Modulus (GPa) | | | Thermal Cracking Resistance | | α(2) (x $10^{-6}$/°C) |
|---|---|---|---|---|---|---|
| | 350°C | 450°C | 500°C | Maximum Crack Length (μm) | Evaluation | |
| Example 21 | 197 | 177 | 161 | 98 | Good | 12.1 |
| Example 22 | 198 | 178 | 163 | 95 | Good | 12.5 |
| Example 23 | 199 | 177 | 162 | 90 | Good | 12.2 |
| Example 24 | 197 | 177 | 155 | 78 | Good | 12.3 |
| Example 25 | 197 | 176 | 154 | 47 | Excellent | 12.3 |
| Example 26 | 196 | 177 | 156 | 44 | Excellent | 12.2 |
| Example 27 | 196 | 176 | 159 | 54 | Good | 12.1 |
| Example 28 | 197 | 172 | 159 | 87 | Good | 12.1 |
| Example 29 | 195 | 182 | 161 | 33 | Excellent | 12.1 |
| Example 30 | 197 | 184 | 151 | 62 | Good | 11.9 |
| Example 31 | 197 | 184 | 151 | 62 | Good | 11.9 |
| Example 32 | 194 | 170 | 153 | 48 | Excellent | 12.0 |
| Example 33 | 196 | 171 | 152 | 97 | Good | 12.1 |
| Example 34 | 191 | 176 | 163 | 27 | Excellent | 12.1 |
| Example 35 | 196 | 177 | 156 | 40 | Excellent | 12.1 |
| Example 36 | 190 | 178 | 155 | 42 | Excellent | 12.5 |
| Example 37 | 190 | 175 | 161 | 80 | Good ~~Excellent~~ | 12.4 |
| Example 38 | 190 | 177 | 156 | 31 | Excellent | 11.8 |
| Example 39 | 195 | 170 | 155 | 20 | Excellent | 11.6 |
| Example 40 | 193 | 177 | 155 | 54 | Good | 12.5 |
| Example 41 | 193 | 175 | 165 | 26 | Excellent | 12.6 |
| Example 42 | 190 | 178 | 158 | 44 | Excellent | 11.5 |
| Example 43 | 195 | 176 | 155 | 41 | Excellent | 12.2 |
| Example 44 | 192 | 176 | 156 | 42 | Excellent | 12.3 |
| Example 45 | 191 | 177 | 157 | 50 | Excellent | 12.1 |
| Comp. Ex. 5 | 195 | 182 | 161 | 35 | Excellent | 12.1 |
| Comp. Ex. 6* | 169 | 158 | 138 | 162 | Poor | 11.5 |
| Comp. Ex. 7 | 171 | 155 | 136 | 179 | Poor | 12.5 |
| Comp. Ex. 8 | 169 | 158 | 138 | 162 | Poor | 11.5 |

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|---|---|---|---|---|---|---|
| Comp. Ex. 9* | 162 | 154 | 132 | 110 | Fair | 18 |
| Comp. Ex. 10* | 164 | 156 | 135 | 122 | Fair | 17.2 |
| Comp. Ex. 11 | 193 | 171 | 150 | 168 | Poor | 12.4 |
| Comp. Ex. 12* | 194 | 171 | 149 | 150 | Fair | 12.2 |